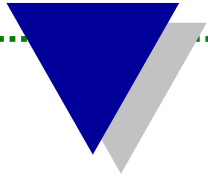




*Chicago Operations Office*



# Technology Deployment Program

Miles C. Dionisio

EM-50 Lead

November 29, 2001



# Significant Accomplishments in FY2001

- ◆ Deployment of 7 innovative technologies for the characterization of the BGRR
  - Resulted in significant savings
  - Accelerated schedule
- ◆ BNL's documented report on Lessons Learned gained through FY00 deployment activities



# Look Ahead Into FY2002



# Needs Identified By PBS

(FY98 - Present)

◆ CH-BRNL-RA:	8
◆ CH-BRNL-DD:	2
◆ CH-BRNL-WO:	2
◆ CH-ANLE-RA:	6
◆ CH-ANLE-DD:	5
◆ CH-ANLE-WO:	5
◆ CH- AMES-WO:	1
◆ CH-PPPL-DD:	3



# Needs Identified for PBS CH-BRNL-RA

Total Life Cycle Cost = \$297.5M

- ◆ **Characterization and Sorting of Potentially Contaminated Hg Mixed Waste From Chemical Holes**
- ◆ **Remediation of Radiologically Contaminated Soil**
- ◆ **Non-Intrusive Remediation Technologies for the Peconic River**
- ◆ Remediation of Strontium-90 Contaminated GW
- ◆ Remediation of (VOCs) in GW
- ◆ Long-Term Groundwater Monitoring
- ◆ Vadose Contamination at BNL
- ◆ **Detritiation of Water**



# Needs Identified for PBS CH-BRNL-DD

Total Life Cycle Cost = \$68.9 M

◆ Characterization for  
Decontamination and  
Decommissioning of the  
BGRR

1. MARSSIM ASTD
2. BetaScint Fiber-Optic Sensor for Detecting Strontium-90 and Uranium-238 in Soil
3. In Situ Object Counting System
4. Compact Subsurface Investigation System
5. Environmental Visualization System (EVS-PRO by C-Tech)
6. Perfluorocarbon Tracers (PFTs)
7. LandTrek
8. Diamond Wire Cutter

◆ Cost Effective  
Decontamination of the  
BGRR

*Low priority in FY02 due to funding  
reductions in D&D activities*



# Needs Identified for PBS CH-ANLE-RA

Total Life Cycle Cost = \$37.6M

- ◆ New Tools for Long-Term Monitoring of Groundwater Quality and Groundwater Flow Conditions at ANL-E
- ◆ Continuation of Expanded Monitoring Activities for Tritium and VOC Fate @ the 317/319 Area @ ANL-E
- ◆ Demonstrate Effectiveness of Phytoremediation in the Removal of Tritium from GW
- ◆ In-situ Remediation of Petroleum Products in Low Permeability Soil
- ◆ Remote Decontamination of In-Ground Concrete Structures
- ◆ Remote Characterization of In-Ground Concrete Structures



# Needs Identified for PBS CH-ANLE-DD

Total Life Cycle Cost = \$35.6

- ◆ Decontamination of Twenty-Seven Fuel Storage Tubes in Bldg. 301
- ◆ Decontamination of Fixed Surface Contamination of Concrete (Thin Layer Removal)
- ◆ Lead Removal, Segregation and Disposal
- ◆ Improved Worker Protection Equipment
- ◆ Size Reduction of Massive Metal Metal Structures

*Low priority in FY02 due to funding reductions in D&D activities*





# Needs Identified for PBS CH-ANLE-PM

(temporary holding place)

- ◆ Treatment of Reactive Metals Contaminated with TRU
- ◆ Methods to Remotely Separate and Dispose of Potentially Activated Lead Shielding and Concrete Anchors from CP-5 Reactor Facility at ANL-E
- ◆ Treatment of UF<sub>6</sub> in Gas Cylinder
- ◆ Treatment of TRU Organic Liquids Waste



# FY02 ASTD Proposal Submission

- ◆ “Innovative Waste Segregation And Near Real-Time Field Characterization For RCRA Metals In Stockpiled Soil”
  - Total Requested EM-50 funding is \$1.0M
  - Matching funds to be provided by BNL-EM is \$2.5M
  - Cost Reduction is \$3.2 million for the first year, and a
  - Total life cycle cost savings of about \$12M



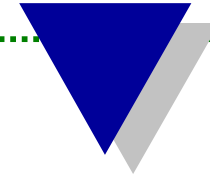
# Detail of FY02 ASTD Proposal

- ◆ Three Needs Under PBS CH-BRNL-RA addressed by this ASTD
  - Treatment of Hg Mixed Waste from Chemical Holes (CH-MW01-99A: Chemical Holes)
  - Remediation of Radiologically Contaminated Soil (CH-SS03-99A: HWMF)
  - Non-Intrusive Remediation Technologies for the Peconic River (CH-SS05-01: Peconic River)



# 1st Deployment Site: Chem Holes

- ◆ Approximately 7000 yd<sup>3</sup> of stockpiled soil removed from the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remediation of BNL Chemical Holes is currently awaiting characterization and shipment off-site for treatment and/or disposal.



## 2nd Deployment Site: HWMF

- ◆ Concentrations of radionuclides in the HWMF are considered to present a future human health risk if unremediated. Another area of concern is the Building 650 Sump and Outfall areas. These areas are primarily contaminated with cesium-137.
- ◆ Similar concerns exist with several areas at BNL where top soil from the HWMF was removed and inadvertently used as landscaping material.





## 3rd Deployment Site: Peconic River

- ◆ Sediments are contaminated with mercury, heavy metals, and cesium-137. Technologies that would minimize disturbance of the wetlands and ecosystem are needed.



# Potential Deployments in FY02

- ◆ CH-BRNL-RA:
  - Powerscreen Vibratory Screening
  - X-Ray Fluorescence
  - Direct Mercury Analyzer
  - Anodic Stripping Voltammeter



# Reporting Issues

- ◆ A PBS # for orphan needs
  - Treatment of Reactive Metals Contaminated with TRU
  - Methods to Remotely Separate and Dispose of Potentially Activated Lead Shielding and Concrete Anchors from CP-5 Reactor Facility at ANL-E
  - Treatment of UF<sub>6</sub> in Gas Cylinder
  - Treatment of TRU Organic Liquids





# Reporting Issues

- ◆ A PBS# for deployments outside of EM (e.g., TFTR D&D Project)
  - Lead TechXtract Chemical Decontamination
  - Diamond Wire Cutting of the Tokomak Fusion Test Reactor Vacuum Vessel
  - Mega Tech Hydraulic Shears



# Key Events Next Fiscal Year

- ◆ ANL-E Site Clean-Up completion expected in FY2003
  - Long Term Stewardship Needs may not be totally addressed yet.